

Science Performance Standards

Indicator A: Understands and uses the processes of scientific investigation and ways of knowing. Able to design, conduct, describe and evaluate these investigations. Understands and applies concepts that unify scientific disciplines. as Inquiry)

Pre-Literacy

Beginning (occasionally, seldom)	Approaching (sometimes)	Met (often, most of the time)	Exceeds (consistently)
<p>Identifies safe procedures in all science activities</p> <p>Organizes (e.g., sorts, classifies, sequences) objects, organisms, and events by different characteristics</p>	<p>Identifies safe procedures in all science activities</p> <p>Organizes (e.g., sorts, classifies, sequences) objects, organisms, and events by different characteristics</p> <p>Formulates basic questions about objects, organizations, events and relationships in a natural and designed world</p> <p>States simple hypothesis about cause-and-effect relationships in the environment</p> <p>Performs simple measures</p> <p>Observes simple systems (e.g., ant farm, plant terrarium, aquarium)</p>	<p>Identifies and uses safe procedures in all science activities</p> <p>Organizes (e.g., sorts, classifies, sequences) objects, organisms, and events by different characteristics</p> <p>Formulates basic questions about objects, organizations, events and relationships in a natural and designed world</p> <p>States simple hypothesis about cause-and-effect relationships in the environment</p> <p>Performs simple measures Performs simple comparisons using measurements</p> <p>Observes simple systems (e.g., ant farm, plant terrarium, aquarium) Describes simple systems</p> <p>States examples of scientific inquiry familiar from previous life experience</p>	<p><i>Is able to correctly teach the following concepts to others:</i></p> <p>Identifies and uses safe procedures in all science activities</p> <p>Organizes (e.g., sorts, classifies, sequences) objects, organisms, and events by different characteristics</p> <p>Performs simple measures Performs simple comparisons using measurements</p>

ABE I Performance Standards

Indicator A: (Science as Inquiry)

Beginning (occasionally, seldom)	Approaching (sometimes)	Met (often, most of the time)	Exceeds (consistently)
Plans and designs an experiment	Plans and designs an experiment	Plans and designs an experiment	<i>Is able to perform all Met performance standards at higher levels of complexity:</i> Plans and designs an experiment
Predicts the results of an experiment	Predicts the results of an experiment	Predicts the results of an experiment	Predicts the results of an experiment
	Conducts an experiment and records data	Conducts an experiment and records data	Conducts an experiment and records data
Observes, collects, sketches, and sorts scientific data	Observes, collects, sketches, and sorts scientific data	Observes, collects, sketches, and sorts scientific data	Observes, collects, sketches, and sorts scientific data
	Catalogs, classifies, and measures scientific data	Catalogs, classifies, and measures scientific data	Catalogs, classifies, and measures scientific data
		Reports through various means, the conclusions of an experiment	Reports through various means, the conclusions of an experiment
		Recognizes that when an experiment is repeated under the same conditions, the results are the same	Recognizes that when an experiment is repeated under the same conditions, the results are the same
		Interviews and surveys scientific data	Interviews and surveys scientific data
Constructs models (e.g., a volcano, a paper airplane, a solar system) that illustrate simple concepts	Constructs models (e.g., a volcano, a paper airplane, a solar system) that illustrate simple concepts	Constructs models (e.g., a volcano, a paper airplane, a solar system) that illustrate simple concepts	Constructs models (e.g., a paper clock) that illustrate more complex concepts
		Compares models to what they represent	Compares models to what they represent
Identifies parts of a familiar system	Identifies parts of a familiar system	Identifies parts of a familiar system	Identifies parts of a familiar system
Identifies changes and patterns of change in a familiar system (e.g., solar system, aquarium, or any simple machine, such as a clock or bicycle)	Identifies changes and patterns of change in a familiar system (e.g., solar system, aquarium, or any simple machine, such as a clock or bicycle)	Identifies changes and patterns of change in a familiar system (e.g., solar system, aquarium, or any simple machine, such as a clock or bicycle)	Identifies changes and patterns of change in a more complex familiar system (e.g., gasoline engine)
		Describes the relationship of parts of a familiar system	Describes the relationship of parts of a familiar system
	Continued on	page 2	
Beginning (occasionally, seldom)	Approaching (sometimes)	Met (often, most of the time)	Exceeds (consistently)

Identifies observable patterns in adult learners' lives, and predicts future events based on those patterns	Identifies observable patterns in adult learners' lives, and predicts future events based on those patterns	Identifies observable patterns in adult learners' lives, and predicts future events based on those patterns	Identifies observable patterns in adult learners' lives, and predicts future events based on those patterns
Distinguishes between natural objects and objects made by humans	Distinguishes between natural objects and objects made by humans	Distinguishes between natural objects and objects made by humans	Distinguishes between natural objects and objects made by humans
	Records changes and patterns of change in a familiar system (e.g., solar system, aquarium, or any simple machine, such as a clock or bicycle)	Records changes and patterns of change in a familiar system at regular intervals	Records changes and patterns of change in a familiar system at regular intervals
	Explains how the form or shape of an object or system is frequently related to its use, operation, or function	Explains how the form or shape of an object or system is frequently related to its use, operation, or function	Explains how the form or shape of an object or system is frequently related to its use, operation, or function

ABE I Science Performance Standards
(Indicator A – Science as Inquiry)

ABE II Performance Standards

Indicator A: Science as Inquiry

Beginning (occasionally, seldom)	Approaching (sometimes)	Met (often, most of the time)	Exceeds (consistently)
Identifies a question, formulates a hypothesis, devises experiments, and predicts outcomes	Identifies a question, formulates a hypothesis, devises experiments, and predicts outcomes Controls and manipulates the variables of an experiment, describes the function of variables, and distinguishes between a question and a hypothesis	Identifies a question, formulates a hypothesis, devises experiments, and predicts outcomes Controls and manipulates the variables of an experiment, describes the function of variables, and distinguishes between a question and a hypothesis Compares and analyzes the results of an experiment, draws a conclusion, and defends conclusions Organizes and presents data gathered from their own experiences, using appropriate mathematical analyses and graphical representations (e.g., bar graph, line graph, frequency table, Venn diagram) Recognizes that conclusions are tentative and open to modification as new data are collected	<i>Is able to perform all Met (performance standards at higher levels of complexity:</i> Identifies a question, formulates a hypothesis, devises experiments, and predicts outcomes Controls and manipulates the variables of an experiment, describes the function of variables, and distinguishes between a question and a hypothesis Compares and analyzes the results of an experiment, draws a conclusion, and defends conclusions Organizes and presents data gathered from their own experiences, using appropriate mathematical analyses and graphical representations (e.g., bar graph, line graph, frequency table, Venn diagram) Recognizes that conclusions are tentative and open to modification as new data are collected
Identifies the parts of a subsystem within a system	Identifies and refines questions from previous investigations Identifies the parts of a subsystem within a system Designs a model to illustrate a system (e.g., a mobile of the solar system) Describes the functions of a subsystem	Identifies and refines questions from previous investigations Analyzes the reliability of scientific reports from magazines, television or other media, using evidence to support or refute a conclusion drawn from a scientific report Identifies the parts of a subsystem within a system Designs a model to illustrate a system (e.g., a mobile of the solar system) Describes the functions of a subsystem States cause-and-effect relationships among components in mechanical or electrical devices	Identifies and refines questions from previous investigations Analyzes the reliability of scientific reports from magazines, television or other media, using evidence to support or refute a conclusion drawn from a scientific report Identifies the parts of a subsystem within a system Designs a model to illustrate a system (e.g., a mobile of the solar system including asteroid belt and satellites of other planets) Describes the functions of a subsystem States cause-and-effect relationships among components in mechanical or electrical devices

ABE III Performance Standards

Indicator A: Science as Inquiry

Beginning (occasionally, seldom)	Approaching (sometimes)	Met (often, most of the time)	Exceeds (consistently)
<p>Formulates questions directed toward objects and phenomena that can be described</p> <p>Designs and executes scientific investigations</p>	<p>Formulates questions directed toward objects and phenomena that can be described</p> <p>Designs and executes scientific investigations</p> <p>Tests only one variable at a time using a control</p>	<p>Formulates questions directed toward objects and phenomena that can be described</p> <p>Designs and executes scientific investigations</p> <p>Tests only one variable at a time using a control</p> <p>Presents information in a formal laboratory report including gathering, recording, organizing data accurately and making correct use of histograms, stem and leaf plots, scatter plots, circle graphs, flow charts, line graphs, bar graphs, charts, etc</p> <p>Interprets data; establishes relationships based on evidence and logical argument; draws conclusions/explanations</p> <p>Proposes, analyzes, and critiques alternative explanations of phenomena</p>	<p><i>Is able to perform all Met performance standards at higher levels of complexity:</i></p> <p>Formulates questions directed toward objects and phenomena that can be described</p> <p>Designs and executes scientific investigations</p> <p>Tests only one variable at a time using a control</p> <p>Presents information in a formal laboratory report including gathering, recording, organizing data accurately and making correct use of histograms, stem and leaf plots, scatter plots, circle graphs, flow charts, line graphs, bar graphs, charts, etc</p> <p>Interprets data; establishes relationships based on evidence and logical argument; draws conclusions/explanations</p> <p>Proposes, analyzes, and critiques alternative explanations of phenomena</p>
<p>Defines the terms: hypothesis, model</p>	<p>Defines the terms: hypothesis, model, principle, law</p> <p>Explains how scientific theory, hypothesis generation, and experimentation are related</p>	<p>Defines the terms: hypothesis, model, principle, law , theory, and paradigm</p> <p>Explains how scientific theory, ypothesis generation, and experimentation are related</p> <p>Recognizes that although all scientific ideas are tentative and subject to change, and theories may be disagreed upon where research is active, for most major ideas in science, there is much experimental and observational confirmation</p>	<p>Defines the terms: hypothesis, model, principle, law , theory, and paradigm</p> <p>Explains how scientific theory, ypothesis generation, and experimentation are related</p> <p>Recognizes that although all scientific ideas are tentative and subject to change, and theories may be disagreed upon where research is active, for most major ideas in science, there is much experimental and observational confirmation</p>

ASE I Performance Standards

Indicator A – Science as Inquiry

Beginning (occasionally, seldom)	Approaching (sometimes)	Met (often, most of the time)	Exceeds (consistently)
Proposes solutions to practical and theoretical problems based on evaluating information gained from scientific investigations	<p>Proposes solutions to practical and theoretical problems based on evaluating information gained from scientific investigations</p> <p>Explains why keeping accurate and detailed records is important</p>	<p>Proposes solutions to practical and theoretical problems based on evaluating information gained from scientific investigations</p> <p>Explains why keeping accurate and detailed records is important</p> <p>Analyzes and evaluates the validity of conclusions based on scientific studies</p> <p>Explains the concept of equilibrium and illustrates the relationship of form to function within natural and designed systems</p>	<p><i>Is able to perform all Met performance standards at higher levels of complexity:</i></p> <p>Proposes solutions to practical and theoretical problems based on evaluating information gained from scientific investigations</p> <p>Explains why keeping accurate and detailed records is important</p> <p>Analyzes and evaluates the validity of conclusions based on scientific studies</p> <p>Explains the concept of equilibrium and illustrates the relationship of form to function within natural and designed systems</p>

ASE II Performance Standards

Indicator A – Science as Inquiry

Beginning (occasionally, seldom)	Approaching (sometimes)	Met (often, most of the time)	Exceeds (consistently)
Designs and conducts an investigation of a scientific problem	<p>Designs and conducts an investigation of a scientific problem</p> <p>Predicts the effects of various factors on the equilibrium of the system</p>	<p>Designs and conducts an investigation of a scientific problem</p> <p>Predicts the effects of various factors on the equilibrium of the system</p> <p>Reports results of investigations to peers, teachers, and others</p> <p>Analyzes a scientific presentation by weighing the evidence and examining the logic in order to reach a decision to the reliability of the results</p> <p>Analyzes an argument by reviewing current scientific understanding, weighing the evidence and examining the logic so as to determining the validity of the argument</p>	<p><i>Is able to perform all Met performance standards at higher levels of complexity:</i></p> <p>Designs and conducts an investigation of a scientific problem</p> <p>Predicts the effects of various factors on the equilibrium of the system</p> <p>Reports results of investigations to peers, teachers, and others</p> <p>Analyzes a scientific presentation by weighing the evidence and examining the logic in order to reach a decision to the reliability of the results</p> <p>Analyzes an argument by reviewing current scientific understanding, weighing the evidence and examining the logic so as to determining the validity of the argument</p>

Indicator B: Understands the impact of science and technology on human activity and the environment as it relates to the past, present and future
(Science and Technology – Past, Present and Future)

Pre-Literacy Performance Standards

Beginning (occasionally, seldom)	Approaching (sometimes)	Met (often, most of the time)	Exceeds (consistently)
Recognizes that some people can and do participate in science and technology	Recognizes that many people can and do participate in science and technology	Recognizes that all people can and do participate in science and technology	Recognizes that all people can and do participate in science and technology
Identifies one career that applies science and technology	Identifies two or three careers that apply science and technology	Identifies many careers that apply science and technology	Identifies many careers that apply science and technology
Identifies one way that scientific technology affects our daily lives, jobs and recreation	Identifies two or three ways that scientific technology affects our daily lives, jobs and recreation	Identifies many ways that scientific technology affects our daily lives, jobs and recreation	Identifies many ways that scientific technology affects our daily lives, jobs and recreation
Demonstrates the proper use of simple technology (e.g., scales, balances, magnifiers, computers)	Demonstrates the proper use of simple technology (e.g., scales, balances, magnifiers, computers)	Demonstrates the proper use of simple technology (e.g., scales, balances, magnifiers, computers)	Demonstrates the proper use of simple technology (e.g., scales, balances, magnifiers, computers)

ABE I Performance Standards

Beginning (occasionally, seldom)	Approaching (sometimes)	Met (often, most of the time)	Exceeds (consistently)
Recognizes that scientific contributions have been made by many kinds of people	Recognizes that scientific contributions have been made by all kinds of people	Recognizes that scientific contributions have been made by all kinds of people everywhere in the world	<i>Is able to perform all Met performance standards at higher levels of complexity:</i> Recognizes that scientific contributions have been made by all kinds of people everywhere in the world
Describes the results of one scientific inquiry in the world (e.g., a timeline of inventions, progression from simple to mechanized tools, understanding weather patterns)	Describes the results of two scientific inquiries in the world (e.g., a timeline of inventions, progression from simple to mechanized tools, understanding weather patterns)	Describes the results of several scientific inquiries in the world (e.g., a timeline of inventions, progression from simple to mechanized tools, understanding weather patterns)	Describes the results of several scientific inquiries in the world (e.g., a timeline of inventions, progression from simple to mechanized tools, understanding weather patterns)
Recognizes that scientific inquiry has produced much knowledge about the world	Recognizes that scientific inquiry has produced much knowledge about the world, that much is still unknown	Recognizes that scientific inquiry has produced much knowledge about the world, that much is still unknown, and that some things will always be unknown	Recognizes that scientific inquiry has produced much knowledge about the world, that much is still unknown, and that some things will always be unknown

Beginning (occasionally, seldom)	Approaching (sometimes)	Met (often, most of the time)	Exceeds (consistently)
Explains how asking questions is part of the process of scientific investigation	Explains how asking and answering questions are part of the process of scientific investigation	Explains how asking and answering questions are part of the process of scientific investigation and compares prior knowledge to the results of a scientific investigation	Explains how asking and answering questions are part of the process of scientific investigation and compares prior knowledge to the results of a scientific investigation
Identifies one occupation that requires the application of science and technology	Identifies two or three occupations that require the application of science and technology	Identifies many occupations that require the application of science and technology	Identifies many occupations that require the application of science and technology
Identifies which resources are limited	Identifies which resources are limited and which resources can be extended through decreased use	Identifies which resources are limited and which resources can be extended through recycling and decreased use	Identifies which resources are limited and which resources can be extended through recycling, decreased use, and reuse
Describes how one application of science may be used to change the quality of life, for better or worse, for people	Describes how two applications of science may be used to change the quality of life, for better or worse, for people	Describes how the application of science may be used to change the quality of life, for better or worse, for people	Describes how the application of science may be used to change the quality of life, for better or worse, for people
Explains how one physical environment may change due to human activity (e.g., irrigation, dams and levees, offshore drilling)	Explains how two physical environments may change due to human activity (e.g., irrigation, dams and levees, offshore drilling)	Explains how physical environments change due to human activity (e.g., irrigation, dams and levees, offshore drilling)	Explains how physical environments change due to human activity (e.g., irrigation, dams and levees, offshore drilling)
Describes populations, resources, and environments (e.g., habitat, ecosystem, food chain), and explain	Describes populations, resources, and environments (e.g., habitat, ecosystem, food chain), and explain interactions among specific populations, resources, and environments	Describes populations, resources, and environments (e.g., habitat, ecosystem, food chain), and explain interactions and interdependence among specific populations, resources, and environments	Describes populations, resources, and environments (e.g., habitat, ecosystem, food chain), and explain interactions and interdependence among specific populations, resources, and environments
Identifies and describes how one example of technology (e.g., zipper, paper clips, computers) contributes to solving problems	Identifies and describes how two examples of technology (e.g., zipper, paper clips, computers) contributes to solving problems	Identifies and describes how technology (e.g., zipper, paper clips, computers) contributes to solving problems	Identifies and describes how technology (e.g., zipper, paper clips, computers) contributes to solving problems

ABE I Science Performance Standards
Indicator B: Science & Technology

ABE II Performance Standards

Indicator B: Science and Technology

Beginning (occasionally, seldom)	Approaching (sometimes)	Met (often, most of the time)	Exceeds (consistently)
<p>Describes one major scientific contribution</p> <p>Describes one example of how science and technology are interrelated</p> <p>Provides one different explanation for a phenomenon; defends the explanations with evidence</p> <p>Recognizes how scientific knowledge, thinking processes and skills are used in a career outside of science</p> <p>Develops a systematic approach to describe the risks associated with natural and biological hazards</p> <p>Uses scientific findings to propose and evaluate one solution to a human or environmental problem (e.g., water pollution, malnutrition, fire hazards)</p> <p>Evaluates one possible strength and weakness of a given solution to a problem</p> <p>Explains how one technological solution has intended benefits and unintended consequences</p> <p>Analyzes how the introduction of one new technology has affected human activity (e.g., invention of the telescope, applications of modern telecommunications)</p>	<p>Describes two major scientific contributions</p> <p>Describes two examples of how science and technology are interrelated</p> <p>Provides different explanations for a phenomenon; defends explanations with evidence</p> <p>Recognizes how scientific knowledge, thinking processes and skills are used in several careers outside of science</p> <p>Develops and uses a systematic approach to describe the risks associated with some natural and biological hazards</p> <p>Uses scientific findings to propose and evaluate solutions to one human or environmental problem (e.g., water pollution, malnutrition, fire hazards), and modify the solutions to the problem, if necessary</p> <p>Evaluates two possible strengths and/or weaknesses of a given solution to a problem</p> <p>Explains how two technological solutions have intended benefits and unintended consequences</p> <p>Analyzes how the introduction of two or three new technologies has affected human activity (e.g., invention of the telescope, applications of modern telecommunications)</p>	<p>Describes many major scientific contributions</p> <p>Describes how science and technology are interrelated using many examples</p> <p>Provides different explanations for a phenomenon; defends and refutes the explanations with evidence</p> <p>Recognizes how scientific knowledge, thinking processes and skills are used in a great variety of careers</p> <p>Develops and uses a systematic approach to describe the risks associated with many natural and biological hazards</p> <p>Uses scientific findings to propose and evaluate solutions to several human or environmental problems (e.g., water pollution, malnutrition, fire hazards), and modify the solutions to the problems, if necessary</p> <p>Evaluates the possible strengths and weaknesses of a given solution to a problem</p> <p>Explains how many technological solutions have intended benefits and unintended consequences</p> <p>Analyzes how the introductions of many new technologies have affected human activity (e.g., invention of the telescope, applications of modern telecommunications)</p>	<p><i>Is able to perform all Met performance standards at higher levels of complexity.</i> Describes many major scientific contributions</p> <p>Describes how science and technology are interrelated using many examples</p> <p>Provides different explanations for a phenomenon; defends and refutes the explanations with evidence</p> <p>Recognizes how scientific knowledge, thinking processes and skills are used in a great variety of careers</p> <p>Develops and uses a systematic approach to describe the risks associated with many natural and biological hazards</p> <p>Uses scientific findings to propose and evaluate solutions to several human or environmental problems (e.g., water pollution, malnutrition, fire hazards), and modify the solutions to the problems, if necessary</p> <p>Evaluates the possible strengths and weaknesses of a given solution to a problem</p> <p>Explains how many technological solutions have intended benefits and unintended consequences</p> <p>Analyzes how the introductions of many new technologies have affected human activity (e.g., invention of the telescope, applications of modern telecommunications)</p>

ABE III Performance Standards

Indicator B: Science and Technology

Beginning (occasionally, seldom)	Approaching (sometimes)	Met (often, most of the time)	Exceeds (consistently)
<p>Compares and contrasts one goal of science and technology</p> <p>Explains how scientific knowledge, thinking processes and skills are used to solve problems in several careers</p> <p>Describes a technological discovery that has influenced science</p> <p>Describes and compares the intended benefits and unintended consequences and/or risks of one scientific and technologic innovation on society and the quality of life</p> <p>Describes how one example of technology affects the definition of, access to, and use of resources and the effects of population on those resources</p> <p>Describes how human activities can induce hazards through resource acquisition, urban growth</p> <p>Analyzes the risk factors associated with natural, biological, and personal (smoking, diet, and drugs) hazards</p> <p>Evaluates one merit of a proposed solution to a human or environmental problem</p> <p>Gives an example that demonstrates that scientists have ethical codes that extend to potential risks to human subjects, property</p>	<p>Compares and contrasts two goals of science and technology</p> <p>Explains how scientific knowledge, thinking processes and skills are used to solve problems in many careers</p> <p>Describes a technological discovery that has influenced science and a scientific discovery that has influenced technology.</p> <p>Describes and compares the intended benefits and unintended consequences and/or risks of two scientific and technologic innovations on society and the quality of life</p> <p>Describes how two examples of technology affect the definition of, access to, and use of resources and the effects of population on those resources</p> <p>Describes how human activities can induce hazards through resource acquisition, urban growth, land use decisions</p> <p>Analyzes the risk factors associated with natural, biological, chemical, and personal (smoking, diet, and drugs) hazards</p> <p>Evaluates one merit and one disadvantage of a proposed solution to a human or environmental problem</p> <p>Gives an example that demonstrates that scientists have ethical codes that extend to potential risks to human subjects, property, or communities</p>	<p>Compares and contrasts the goals of science and technology</p> <p>Explains how scientific knowledge, thinking processes and skills are used to solve problems in a variety of careers</p> <p>Describes a technological discovery that has influenced science and a scientific discovery that has influenced technology. Determines scientific processes involved in technological advancement</p> <p>Describes and compares the intended benefits and unintended consequences and/or risks of many scientific and technologic innovations on society and the quality of life</p> <p>Describes how many examples of technology affect the definition of, access to, and use of resources and the effects of population on those resources</p> <p>Describes how human activities can induce hazards through resource acquisition, urban growth, land use decisions, and waste disposal</p> <p>Analyzes the risk factors associated with natural, biological, chemical, social (occupational safety and transportation), and personal hazards</p> <p>Evaluates the merits of a proposed solution to a human or environmental problem</p> <p>Gives an example that demonstrates that scientists have ethical codes that extend to potential risks to human subjects, property, and communities</p>	<p><i>Is able to perform all Met performance standards at higher levels of complexity.</i></p> <p>Compares and contrasts the goals of science and technology</p> <p>Explains how scientific knowledge, thinking processes and skills are used to solve problems in a variety of careers</p> <p>Describes a technological discovery that has influenced science and a scientific discovery that has influenced technology. Determines scientific processes involved in technological advancement</p> <p>Describes and compares the intended benefits and unintended consequences and/or risks of many scientific and technologic innovations on society and the quality of life</p> <p>Describes how many examples of technology affect the definition of, access to, and use of resources and the effects of population on those resources</p> <p>Describes how human activities can induce hazards through resource acquisition, urban growth, land use decisions, and waste disposal</p> <p>Analyzes the risk factors associated with natural, biological, chemical, social (occupational safety and transportation), and personal hazards</p> <p>Evaluates the merits of a proposed solution to a human or environmental problem</p> <p>Gives an example that demonstrates that scientists have ethical codes that extend to potential risks to human subjects, property, and communities</p>

ASE I Performance Standards

Indicator B: Science and Technology

Beginning (occasionally, seldom)	Approaching (sometimes)	Met (often, most of the time)	Exceeds (consistently)
Describes how the factor of technology can affect the development and acceptance of scientific thought	Describes how the factors of technology and societal views can affect the development and acceptance of scientific thought	Describes how the factors of technology, personalities, world events and societal views can affect the development and acceptance of scientific thought	<i>Is able to perform all Met performance standards at higher levels of complexity:</i> Describes how the factors of technology, personalities, world events and societal views can affect the development and acceptance of scientific thought
Explains how an accepted idea could be challenged by scientific innovation giving one example	Explains how an accepted idea could be challenged by scientific innovation giving two examples	Explains how an accepted idea could be challenged by scientific innovation giving more than two examples	Explains how an accepted idea could be challenged by scientific innovation giving more than two examples
Illustrates how an invention or discovery could impact further scientific thought giving one example	Illustrates how an invention or discovery could impact further scientific thought giving two examples	Illustrates how an invention or discovery could impact further scientific thought giving multiple examples	Illustrates how an invention or discovery could impact further scientific thought giving multiple examples
Explains how peer review is important to the ethical traditions of science	Explains how peer review and reporting of methods and outcomes of investigations are important to the ethical traditions of science	Explains how peer review, reporting of methods and outcomes of investigations, and accepting criticism are important to the ethical traditions of science	Explains how peer review, reporting of methods and outcomes of investigations, and accepting criticism are important to the ethical traditions of science
Applies scientific thought processes of skepticism to seek a solution to a personal or social/environmental issue	Applies scientific thought processes of skepticism and objectivity to seek a solution to a personal or social/environmental issue	Applies scientific thought processes of skepticism, objectivity and logic to seek a solution to a personal or social/environmental issue	Applies scientific thought processes of skepticism, objectivity and logic to seek a solution to a personal or social/environmental issue
Illustrates how increasing human populations affect natural resources and environmental pollution giving one example	Illustrates how increasing human populations affect natural resources and environmental pollution giving two examples	Illustrates how increasing human populations affect natural resources and environmental pollution giving multiple examples	Illustrates how increasing human populations affect natural resources and environmental pollution giving multiple examples
Identifies how technology can affect personal growth using one illustration	Identifies how technology can affect personal growth using two illustrations	Identifies how technology can affect personal growth using more than two illustrations	Identifies how technology can affect personal growth using more than two illustrations
Lists one factor that can affect population quality, size, growth, or stability, and identifies the effects of the factor	Lists two factors that can affect population quality, size, growth, or stability, and identifies the effects of each factor	Lists three factors that can affect population quality, size, growth, or stability, and identifies the effects of each factor	Lists three factors that can affect population quality, size, growth, or stability, and identifies the effects of each factor

ASE II Performance Standards

Indicator B: Science and Technology

Beginning (occasionally, seldom)	Approaching (sometimes)	Met (often, most of the time)	Exceeds (consistently)
<p>Chooses a major invention or discovery of the past and illustrates one way that development affected society and further scientific developments</p> <p>Traces the development of one selected invention, theory or discovery from its inception to modern day</p> <p>Proposes a solution to an existing personal problem</p> <p>Designs a product to meet a personal or societal need</p>	<p>Chooses a major invention or discovery of the past and illustrates two ways that development affected society and further scientific developments</p> <p>Traces the development of two selected inventions, theories or discoveries from their inception to modern day</p> <p>Proposes and tests a solution to an existing personal problem</p> <p>Designs a product to meet a personal or societal need; tests the product</p>	<p>Chooses a major invention or discovery of the past and illustrates many ways that development affected society and further scientific developments</p> <p>Traces the development of a selected invention, theory and discovery from their inception to modern day</p> <p>Proposes and tests a solution to an existing social or personal problem</p> <p>Designs a product to meet a personal or societal need; tests the product and evaluates the test results</p> <p>Differentiates among sudden disastrous natural occurrences and slower progressive natural hazards and their effects on human populations</p> <p>Suggests several possible ways to avoid the effects of natural disasters on human populations</p> <p>Identifies the basic processes of natural ecosystems, and explains how these processes affect and are affected by humans</p>	<p><i>Is able to perform all Met performance standards at higher levels of complexity:</i></p> <p>Chooses a major invention or discovery of the past and illustrates many ways that development affected society and further scientific developments</p> <p>Traces the development of a selected invention, theory and discovery from their inception to modern day</p> <p>Proposes and tests a solution to an existing social or personal problem</p> <p>Designs a product to meet a personal or societal need; tests the product and evaluates the test results</p> <p>Differentiates among sudden disastrous natural occurrences and slower progressive natural hazards and their effects on human populations</p> <p>Suggests several possible ways to avoid the effects of natural disasters on human populations</p> <p>Identifies the basic processes of natural ecosystems, and explains how these processes affect and are affected by humans</p>

Indicator C: Understands the characteristics of living things, the diversity of life and how organisms change over time in terms of
Life biological adaptations and genetics. Understands the interrelationships of matter and energy in living organisms and the
Science interactions of living organisms with their environments

Pre-Literacy Performance Standards

Beginning (occasionally, seldom)	Approaching (sometimes)	Met (often, most of the time)	Exceeds (consistently)
Describes one difference between living and non-living things	Describes two differences between living and non-living things	Describes differences between living and non-living things	Describes differences between living and non-living things
Describes one basic need of living organisms for survival	Describes two basic needs of living organisms for survival	Describes several basic needs of living organisms for survival	Describes all basic needs of living organisms for survival
Recognizes and distinguishes similarities and differences between two species	Recognizes and distinguishes similarities and differences among several species	Recognizes and distinguishes similarities and differences among diverse species	Recognizes and distinguishes similarities and differences among diverse species
Identifies one system of the human body	Identifies two systems of the human body	Identifies the various systems of the human body	Identifies the various systems of the human body

ABE I Performance Standards

Indicator C: Life Science

Beginning (occasionally, seldom)	Approaching (sometimes)	Met (often, most of the time)	Exceeds (consistently)
Describes a cause-and-effect relationship in a living system	Describes two cause-and-effect relationships in living systems	Describes and explains cause-and-effect relationships in living systems	Describes and explains cause-and-effect relationships in living systems
Traces the life cycles of one organism	Traces the life cycles of several organisms	Traces the life cycles of various organisms	Traces the life cycles of various organisms
Identifies the basic structures of plants and animals	Identifies the basic structures of plants and animals	Identifies the basic structures and describes the functions [of the basic structures] of plants and animals	Identifies the basic structures and describes the functions [of the basic structures] of plants and animals
Recognizes that component parts make up the human body systems (e.g., digestive, muscular, skeletal)	Recognizes that component parts make up the human body systems (e.g., digestive, muscular, skeletal)	Recognizes that component parts make up the human body systems (e.g., digestive, muscular, skeletal), including major organs (e.g., lungs, heart, skin) within systems	Recognizes that component parts make up the human body systems (e.g., digestive, muscular, skeletal), including major organs (e.g., lungs, heart, skin) within systems
Identifies living versus non-living components within ecosystems	Identifies living versus non-living components within ecosystems	Identifies living versus non-living components within ecosystems and describes the interaction among the two	Identifies living versus non-living components within ecosystems and describes the interaction among the two
Defines terms: predator, prey, parasite, host, food chain, and web	Defines terms: predator, prey, parasite, host, food chain, and web	Defines terms: predator, prey, parasite, host, food chain, and web	Defines terms: predator, prey, parasite, symbiote, host, food chain, and web
	Describes relationships among various organisms in their environment (e.g., predator/prey, parasite/host, food chains and webs)	Describes relationships among various organisms in their environment (e.g., predator/prey, parasite/host, food chains and webs)	Describes relationships among various organisms in their environment (e.g., predator/prey, parasite/host, food chains and webs)
		Classifies organisms according to common characteristics (e.g., bones, appendages)	Classifies organisms according to common characteristics (e.g., bones, appendages)
Identifies some characteristics that are common to all individuals of a species/group	Identifies some characteristics that are common to all individuals of a species/group	Identifies some characteristics that are common to all individuals of a species/group and recognizes why there are differences and what they are	Identifies some characteristics that are common to all individuals of a species/group and recognizes why there are differences and what they are
	Recognizes that offspring within families have both similarities and differences	Recognizes that offspring within families have both similarities and differences	Recognizes that offspring within families have both similarities and differences
		Explains that all organisms cause changes, some beneficial and some detrimental, in the environments where they live, giving an example.	Explains that all organisms cause changes, some beneficial and some detrimental, in the environments where they live, giving multiple examples.

ABE II Performance Standards

Indicator C: Life Science

Beginning (occasionally, seldom)	Approaching (sometimes)	Met (often, most of the time)	Exceeds (consistently)
Constructs a simple classification system based on physical characteristics of organisms	Constructs a simple classification system based on physical characteristics of organisms	Constructs a simple classification system based on physical characteristics of organisms	Constructs a simple classification system based on physical characteristics of organisms
Identifies the basic structures and functions of various cells	Identifies and differentiates between the basic structures and functions of some cells	Identifies and differentiates between the basic structures and functions of various cells	Identifies and differentiates between the basic structures and functions of various cells
Identifies the main structures of cells and tissues within an organism	Identifies the main structures of cells, tissues, and organ systems within an organism	Identifies the main structures of cells, tissues, and organ systems within an organism, and identifies the interrelationships among them	Identifies the main structures of cells, tissues, and organ systems within an organism, and identifies the interrelationships among them
Identifies vital body systems (e.g., digestion, respiration, excretion, reproduction, circulation, movement, control, coordination)	Identifies the major components of vital body systems	Identifies the major components of vital body systems and identifies the functions of those systems	Identifies the major components of vital body systems and identifies the functions of those systems and how they are affected by lifestyle
Describes one organism's adaptations or constancy over geologic time	Describes two organisms' adaptations or constancy over geologic time	Describes many organisms' adaptations or constancy over geologic time	Describes many organisms' adaptations or constancy over geologic time
Distinguishes between physical characteristics which are, and are not, inherited	Describes the role of genes in heredity of one characteristic, and distinguishes between physical characteristics which are, and are not, inherited	Describes the role of genes in heredity, and distinguishes between physical characteristics which are, and are not, inherited	Describes the role of genes in heredity, and distinguishes between physical characteristics which are, and are not, inherited
Describes the components of an ecosystem	Describes the components of an ecosystem and how living components interact with non-living components.	Describes the components of an ecosystem and how living components interact with non-living components. Explains that both components are interdependent within an ecosystem, including the adaptation of plants and animals to their environment	Describes the components of an ecosystem and how living components interact with non-living components. Explains that both components are interdependent within an ecosystem, including the adaptation of plants and animals to their environment

ABE III Performance Standards

Indicator C: Life Science

Beginning (occasionally, seldom)	Approaching (sometimes)	Met (often, most of the time)	Exceeds (consistently)
Identifies the characteristics of living things	Identifies the characteristics of living things	Identifies the characteristics and structure of living things	Identifies the characteristics and structure of living things
Constructs classification systems for grouping organisms	Constructs classification systems for grouping organisms and identifies one organism based on existing classification systems	Constructs classification systems for grouping organisms and identifies organisms based on existing classification systems	Constructs classification systems for grouping organisms and identifies organisms based on existing classification systems
Compares and contrasts the basic structures of various types of cells, tissues, and organs	Compares and contrasts the basic structures and components of different types of cells, tissues, and organs	Compares and contrasts the basic structures, components, and functions of different types of cells, tissues, and organs	Compares and contrasts the basic structures, components, and functions of different types of cells, tissues, and organs
Identifies the systems for digestion, respiration, reproduction, circulation, excretion, movement, control, and coordination in the human body	Identifies the systems for digestion, respiration, reproduction, circulation, excretion, movement, control, and coordination in the human body and how some of those systems work together	Identifies the systems for digestion, respiration, reproduction, circulation, excretion, movement, control, and coordination in the human body and how those systems work together	Identifies the systems for digestion, respiration, reproduction, circulation, excretion, movement, control, and coordination in the human body and how those systems work together
Describes the theory of evolution	Describes the theory of evolution; able to describe species' variation and extinction over geologic time	Describes the theory of evolution; able to describe species' diversity and adaptation, variation, and extinction over geologic time	Describes the theory of evolution; able to describe species' diversity and adaptation, variation, and extinction over geologic time
Distinguishes between dominant and recessive traits	Distinguishes between dominant and recessive traits	Describes the role of chromosomes and genes in heredity Distinguishes between dominant and recessive traits and describes information that is carried in a gene	Describes the role of chromosomes and genes in heredity Distinguishes between dominant and recessive traits and describes information that is carried in a gene
Identifies the structure and function of systems (e.g., respiratory, digestive, circulatory, nervous)	Identifies the structure and function of systems (e.g., respiratory, digestive, circulatory, nervous), and gives one example of the function of feedback and equilibrium	Identifies the structure and function of systems (e.g., respiratory, digestive, circulatory, nervous), and the function of feedback and equilibrium	Identifies the structure and function of systems (e.g., respiratory, digestive, circulatory, nervous), and the function of feedback and equilibrium
Explains and models the interaction and interdependence of living and non-living components within ecosystems, including food webs and resources	Explains and models the interaction and interdependence of living and non-living components within ecosystems, food webs, resources, and energy	Explains and models the interaction and interdependence of living and non-living components within ecosystems, including the adaptation of plants and animals to their environment, food webs, resources, and energy	Explains and models the interaction and interdependence of living and non-living components within ecosystems, including the adaptation of plants and animals to their environment, food webs, resources, and energy

ASE I Performance Standards

Indicator C: Life Science

Beginning (occasionally, seldom)	Approaching (sometimes)	Met (often, most of the time)	Exceeds (consistently)
Explains the process of respiration	Explains the processes of photosynthesis and respiration	Explains the processes of photosynthesis and respiration in the interdependency of plants and animals	Explains the processes of photosynthesis and respiration in the interdependency of plants and animals
Describes process of mitosis and the process of meiosis	Compares process of mitosis with the process of meiosis	Compares the purpose and process of mitosis with the purpose and process of meiosis	Compares the purpose and process of mitosis with the purpose and process of meiosis
Describes how energy is used in maintenance and growth of cells	Describes how energy is used in maintenance, repair, and growth of cells	Describes how energy is used in maintenance, repair, growth and development of cells	Describes how energy is used in maintenance, repair, growth and development of cells
Predicts how change in an environmental factor can affect the success or failure of a population to survive	Predicts how change in an environmental factor can affect the success or failure of a population to survive and gives one reason for prediction	Predicts how change in an environmental factor can affect the success or failure of a population to survive and gives several reasons for prediction	Predicts how change in an environmental factor can affect the success or failure of a population to survive and gives several reasons for prediction
Describes how a single-celled organism carries out the function of each of the systems found in multi-celled organisms	Describes how a single-celled organism carries out the function of each of the systems found in multi-celled organisms	Describes how a single-celled organism carries out the function of each of the systems found in multi-celled organisms	Describes how a single-celled organism carries out the function of each of the systems found in multi-celled organisms
Describes the physiology of each system in multi-celled organisms and how one relates to homeostasis	Describes the physiology of each system in multi-celled organisms and how two relate to homeostasis	Describes the physiology of each system in multi-celled organisms and how each relates to homeostasis	Describes the physiology of each system in multi-celled organisms and how each relates to homeostasis
Identifies the relationship of DNA, genes and chromosomes	Identifies the relationship of DNA, genes and chromosomes and explains how a mutation affects this relationship	Identifies the relationship of DNA, genes and chromosomes and explains how a mutation affects this relationship and the individual	Identifies the relationship of DNA, genes and chromosomes and explains how a mutation affects this relationship and the individual

ASE II Performance Standards

Indicator C: Life Science

Beginning (occasionally, seldom)	Approaching (sometimes)	Met (often, most of the time)	Exceeds (consistently)
Explains how exposure to one factor (e.g., sunlight, ozone, drugs, nitrates) may increase the rate of mutation and cause variances in human diversity	Explains how exposure to two factors (e.g., sunlight, ozone, drugs, nitrates) may increase the rate of mutation and cause variances in human diversity	Explains how exposure to several factors (e.g., sunlight, ozone, drugs, nitrates) may increase the rate of mutation and cause variances in human diversity	Explains how exposure to several factors (e.g., sunlight, ozone, drugs, nitrates) may increase the rate of mutation and cause variances in human diversity
Describes mutations	Describes how mutations contribute to genetic diversity	Describes how mutations contribute to genetic diversity giving examples	Describes how mutations contribute to genetic diversity giving numerous examples
Describes how an environmental change could affect various species within an ecosystem	Describes how an environmental change could affect various species within an ecosystem	Using scientific evidence, illustrates that descent from common ancestors produced today's diversity of organisms Describes how an environmental change could affect various species within an ecosystem giving examples	Using scientific evidence, illustrates that descent from common ancestors produced today's diversity of organisms Describes how an environmental change could affect various species within an ecosystem giving examples

Indicator D: Understands the nature of matter and energy including their forms, the changes they undergo and their interactions
Physical Science

Pre-Literacy Performance Standards

Beginning (occasionally, seldom)	Approaching (sometimes)	Met (often, most of the time)	Exceeds (consistently)
Identifies the physical properties of objects	Describes the physical properties (length, mass, volume, temperature, texture, etc.) common to various tangible objects	Compares objects in terms of physical properties	Compares objects in terms of physical properties

ABE I Performance Standards

Beginning (occasionally, seldom)	Approaching (sometimes)	Met (often, most of the time)	Exceeds (consistently)
Examines, describes, classifies, measures and compares tangible objects in terms of common physical properties (e.g., length, mass, volume, temperature, size, weight, shape, texture, flexibility, color)	Examines, describes, classifies, measures and compares tangible objects in terms of common physical properties (e.g., length, mass, volume, temperature, size, weight, shape, texture, flexibility, color)	Examines, describes, classifies, measures and compares tangible objects in terms of common physical properties (e.g., length, mass, volume, temperature, size, weight, shape, texture, flexibility, color)	Examines, describes, classifies, measures and compares tangible objects in terms of common physical properties (e.g., length, mass, volume, temperature, size, weight, shape, texture, flexibility, color)
Creates mixtures (e.g., salt and sand, iron filings and soil)	Creates mixtures and recognizes that they may be separated based on differences in properties	Creates mixtures (e.g., salt and sand, iron filings and soil) and separates them based on differences in properties	Creates mixtures (e.g., salt and sand, iron filings and soil) and separates them based on differences in properties
Recognizes that objects can be made of one or more materials	Recognizes that objects can be made of one or more materials	Recognizes that objects can be made of one or more materials	Recognizes that objects can be made of one or more materials
Demonstrates that heat and motion can cause changes	Demonstrates that light, heat and motion can cause changes	Demonstrates that light, heat, motion, magnetism and sound can cause changes	Demonstrates that light, heat, motion, magnetism and sound can cause changes
Identifies the different states of matter	Identifies the different states of matter and recognizes that matter can change	Identifies the different states of matter and recognizes that matter can change and exist in one or more states	Identifies the different states of matter and recognizes that matter can change and exist in one or more states
Recognizes that light travels in a straight line	Recognizes that light travels in a straight line and can be absorbed	Recognizes that light travels in a straight line and can be reflected, refracted or absorbed.	Recognizes that light travels in a straight line and can be reflected, refracted or absorbed.

ABE II Performance Standards

Indicator D: Physical Science

Beginning (occasionally, seldom)	Approaching (sometimes)	Met (often, most of the time)	Exceeds (consistently)
Examines, describes, compares, measures, and classifies objects and mixtures of substances based on common physical and chemical properties (e.g., states of matter, mass, volume, density, boiling points, magnetism, solubility)	Examines, describes, compares, measures, and classifies objects and mixtures of substances based on common physical and chemical properties (e.g., states of matter, mass, volume, density, boiling points, pH, magnetism, solubility)	Examines, describes, compares, measures, and classifies objects and mixtures of substances based on common physical and chemical properties (e.g., states of matter, mass, volume, electrical charge, density, boiling points, pH, magnetism, solubility)	Examines, describes, compares, measures, and classifies objects and mixtures of substances based on common physical and chemical properties (e.g., states of matter, mass, volume, electrical charge, density, boiling points, pH, magnetism, solubility)
Distinguishes between mixtures and compounds	Distinguishes between mixtures and compounds	Distinguishes between mixtures and compounds	Distinguishes between mixtures and compounds
Identifies various types of energy sources	Identifies various types of energy sources and describes one way energy is transferred	Identifies various types of energy sources and describes how energy is transferred	Identifies various types of energy sources and describes how energy is transferred
Identifies and predicts what will change and what will remain unchanged when matter experiences an external force or energy change (e.g., boiling a liquid)	Identifies and predicts what will change and what will remain unchanged when matter experiences an external force or energy change (e.g., boiling a liquid; comparing the force, distance and work involved in simple machines)	Identifies and predicts what will change and what will remain unchanged when matter experiences an external force or energy change (e.g., boiling a liquid; comparing the force, distance and work involved in simple machines)	Identifies and predicts what will change and what will remain unchanged when matter experiences an external force or energy change (e.g., boiling a liquid; comparing the force, distance and work involved in simple machines)
Describes characteristics (e.g., speed, distance, mass, force, gravity) of moving objects and their interactions (e.g., force, velocity, acceleration, potential energy and kinetic energy) within a system	Describes and measures characteristics (e.g., speed, distance, mass, force, gravity) of moving objects and their interactions (e.g., force, velocity, acceleration, potential energy and kinetic energy) within a system	Describes, measures and calculates characteristics (e.g., speed, distance, mass, force, gravity) of moving objects and their interactions within a system	Describes, measures and calculates characteristics (e.g., speed, distance, mass, force, gravity) of moving objects and their interactions within a system

ABE III Performance Standards

Indicator D; Physical Science

Beginning (occasionally, seldom)	Approaching (sometimes)	Met (often, most of the time)	Exceeds (consistently)
Examines, describes, compares, measures, and classifies objects and mixtures of substances based on common physical and chemical properties (e.g., states of matter, mass, volume, density, electrical charge, freezing and boiling points, pH, magnetism, solubility)	Examines, describes, compares, measures, and classifies objects and mixtures of substances based on common physical and chemical properties (e.g., states of matter, mass, volume, density, electrical charge, freezing and boiling points, pH, magnetism, solubility)	Examines, describes, compares, measures, and classifies objects and mixtures of substances based on common physical and chemical properties (e.g., states of matter, mass, volume, density, electrical charge, freezing and boiling points, pH, magnetism, solubility)	Examines, describes, compares, measures, and classifies objects and mixtures of substances based on common physical and chemical properties (e.g., states of matter, mass, volume, density, electrical charge, freezing and boiling points, pH, magnetism, solubility)
Classifies and describes matter in terms of elements, compounds, mixtures	Classifies and describes matter in terms of elements, compounds, mixtures, atoms, and molecules	Classifies and describes matter in terms of elements, compounds, mixtures, atoms, and molecules	Classifies and describes matter in terms of elements, compounds, mixtures, atoms, and molecules
Describes how energy is a property of many substances, occurs in many forms (heat, light, electrical, mechanical, sound, nuclear, and chemical, either potential or kinetic), and can be transferred in many ways	Describes how energy is a property of many substances, occurs in many forms (heat, light, electrical, mechanical, sound, nuclear, and chemical, either potential or kinetic), and can be transferred in many ways and can give one example	Describes how energy is a property of many substances, occurs in many forms (heat, light, electrical, mechanical, sound, nuclear, and chemical, either potential or kinetic), and can be transferred in many ways and can give various examples	Describes how energy is a property of many substances, occurs in many forms (heat, light, electrical, mechanical, sound, nuclear, and chemical, either potential or kinetic), and can be transferred in many ways and can give various examples
States the law of conservation of energy	Defines the law of conservation of energy	Defines the law of conservation of energy and gives an example	Defines the law of conservation of energy and gives examples
Identifies and predicts the properties of matter that will change or will remain unchanged when matter experiences an external force or energy change (e.g., changes of state due to heating and cooling, heat absorption and release when chemicals combine, comparing the force, distance and work involved in simple machines)	Identifies and predicts the properties of matter that will change or will remain unchanged when matter experiences an external force or energy change (e.g., changes of state due to heating and cooling, heat absorption and release when chemicals combine, comparing the force, distance and work involved in simple machines)	Identifies and predicts the properties of matter that will change or will remain unchanged when matter experiences an external force or energy change (e.g., changes of state due to heating and cooling, heat absorption and release when chemicals combine, comparing the force, distance and work involved in simple machines)	Identifies and predicts the properties of matter that will change or will remain unchanged when matter experiences an external force or energy change (e.g., changes of state due to heating and cooling, heat absorption and release when chemicals combine, comparing the force, distance and work involved in simple machines)
Describes, measures, and calculates quantities before and after a chemical or physical change within a system	Describes, measures, and calculates quantities before and after a chemical or physical change within a system and uses that data to support the concept of conservation of mass within a closed system	Describes, measures, and calculates quantities before and after a chemical or physical change within a system and uses that data to support the concept of conservation of mass and energy within a closed system	Describes, measures, and calculates quantities before and after a chemical or physical change within a system and uses that data to support the concept of conservation of mass and energy within a closed system
Describes, measures and calculates characteristics (e.g., speed, distance, mass, force, gravity) of moving objects and their interactions (e.g., force, velocity, acceleration, potential energy, kinetic energy) within a system	Describes, measures and calculates characteristics (e.g., speed, distance, mass, force, gravity) of moving objects and their interactions (e.g., force, velocity, acceleration, potential energy, kinetic energy) within a system	Describes, measures and calculates characteristics (e.g., speed, distance, mass, force, gravity) of moving objects and their interactions (e.g., force, velocity, acceleration, potential energy, kinetic energy) within a system using Newton's laws of motion	Describes, measures and calculates characteristics (e.g., speed, distance, mass, force, gravity) of moving objects and their interactions (e.g., force, velocity, acceleration, potential energy, kinetic energy) within a system using Newton's laws of motion and predicts the effects of changing any of the parameters
	Describes Newton's laws of motion		

ASE I Performance Standards

Indicator D: Physical Science

Beginning (occasionally, seldom)	Approaching (sometimes)	Met (often, most of the time)	Exceeds (consistently)
Explains how the sum of energy and matter in systems remains the same despite transference of energy and change in matter	Explains how the sum of energy and matter in systems remains the same despite transference of energy and change in matter	Explains how the sum of energy and matter in systems remains the same despite transference of energy and change in matter	Explains how the sum of energy and matter in systems remains the same despite transference of energy and change in matter
Determines physical and chemical properties of a substance through observation, experimentation and measurement	Determines physical and chemical properties of a substance through observation, experimentation and measurement	Determines physical and chemical properties of a substance through observation, experimentation and measurement	Determines physical and chemical properties of a substance through observation, experimentation and measurement
Uses the periodic table to predict the properties of elements	Uses the periodic table to predict the properties of elements and compounds	Uses the periodic table to predict the properties of elements and compounds	Uses the periodic table to predict the properties of elements and compounds
Identifies qualitative relationships associated with energy	Identifies qualitative and quantitative relationships associated with energy	Identifies and measures qualitative and quantitative relationships associated with energy	Identifies and measures qualitative and quantitative relationships associated with energy
Uses the law of conservation of energy to explain energy changes in chemical reactions	Uses the law of conservation of energy to explain energy changes in chemical reactions	Uses the law of conservation of energy to explain energy changes in chemical reactions	Uses the law of conservation of energy to explain energy changes in chemical reactions
Differentiates among elements, atoms and compounds	Differentiates among elements, atoms and compounds and their relationship to each other giving simple examples	Differentiates among elements, atoms and compounds and their relationship to each other giving multiple examples	Differentiates among elements, atoms and compounds and their relationship to each other giving multiple examples
Relates equilibrium in Physical Science to homeostasis in Life Science	Relates equilibrium in Physical Science to homeostasis in Life Science	Relates equilibrium in Physical Science to homeostasis in Life Science	Relates equilibrium in Physical Science to homeostasis in Life Science giving examples

ASE II Performance Standards

Indicator D: Physical Science

Beginning (occasionally, seldom)	Approaching (sometimes)	Met (often, most of the time)	Exceeds (consistently)
Demonstrates the use of conceptual models in science (e.g., graphs, diagrams, formulae, etc.)	Demonstrates the use of conceptual models in science (e.g., graphs, diagrams, formulae, etc.)	Demonstrates the use of conceptual models in science (e.g., graphs, diagrams, formulae, etc.)	Demonstrates the use of conceptual models in science (e.g., graphs, diagrams, formulae, etc.)
States the universal laws of gravitation	Uses the universal laws of gravitation to predict how gravity force changes with a change of mass	Uses the universal laws of gravitation to predict how gravity force changes with a change of distance and/or mass	Uses the universal laws of gravitation to predict and measure how gravity force changes with a change of distance and/or mass
Uses the 1 st Law of Thermodynamics to explain the energy changes in a physical system	Uses the 1 st Law of Thermodynamics to explain the energy changes in a physical system	Uses the 1 st Law of Thermodynamics to explain the energy changes in a physical system	Uses the 1 st Law of Thermodynamics to explain the energy changes in a physical system
Describes a sequence of events that illustrates the 2 nd Law of Thermodynamics	Describes a two sequences of events that illustrate the 2 nd Law of Thermodynamics	Describes various sequences of events that illustrate the 2 nd Law of Thermodynamics	Describes various sequences of events that illustrate the 2 nd Law of Thermodynamics
Differentiates between gravitational and electromagnetic forces	Differentiates between gravitational and electromagnetic forces	Differentiates between gravitational and electromagnetic forces	Differentiates between gravitational and electromagnetic forces

Indicator E: Understands the composition, formative processes, and history of the Earth, the solar system and the universe
Earth and Space Science

Pre-Literacy Performance Standards

Beginning (occasionally, seldom)	Approaching (sometimes)	Met (often, most of the time)	Exceeds (consistently)
Identifies the basic phenomena and dynamics of common objects in the sky (e.g. sunrise, moon, stars)	Identifies the basic phenomena and dynamics of common objects in the sky (e.g. sunrise, moon, stars)	Identifies the basic phenomena and dynamics of common objects in the sky (e.g. sunrise, moon, stars)	Identifies the basic phenomena and dynamics of common objects in the sky (e.g. sunrise, moon, stars)
Identifies the position of the sun in relation to the nine planets	Identifies the position of the sun in relation to the nine planets	Identifies the position of the sun in relation to the nine planets	Identifies the position of the sun in relation to the nine planets
Identifies basic weather phenomena and their effect on daily activities	Identifies basic weather phenomena and their effect on daily activities	Identifies basic weather phenomena and their effect on daily activities	Identifies basic weather phenomena and their effect on daily activities
Identifies basic earth materials (rocks, soils, water, and gases)	Identifies basic earth materials (rocks, soils, water, and gases) and some of their common uses	Identifies basic earth materials (rocks, soils, water, and gases) and many common uses	Identifies basic earth materials (rocks, soils, water, and gases) and many common uses
Identifies some of the major features of the earth's surface (mountains, rivers, plains, etc.)	Identifies many of the major features of the earth's surface (mountains, rivers, plains, etc.)	Identifies the major features of the earth's surface (mountains, rivers, plains, etc.)	Identifies the major features of the earth's surface (mountains, rivers, plains, etc.)

ABE I Performance Standards

Indicator E: Earth and Space Science

Beginning (occasionally, seldom)	Approaching (sometimes)	Met (often, most of the time)	Exceeds (consistently)
Describes the basic Earth materials (rocks, soils, water and gases) and the physical properties of at least one	Describes the basic Earth materials (rocks, soils, water and gases) and the physical properties of two of them	Describes the basic Earth materials (rocks, soils, water and gases) and their physical properties	Describes the basic Earth materials (rocks, soils, water and gases) and their physical properties
Identifies the planets and describes their relationship to the Sun	Identifies the planets and describes their relationship to the Sun	Identifies the planets and describes their relationship to the Sun and to each other	Identifies the planets and describes their relationship to the Sun and to each other
Recognizes that a major source of the Earth's heat and light is the Sun and describes the motion of the Earth in relation to the Sun	Recognizes that a major source of the Earth's heat and light is the Sun and describes the motion of the Earth in relation to the Sun, including the concepts of day and night	Recognizes that a major source of the Earth's heat and light is the Sun and describes the motion of the Earth in relation to the Sun, including the concepts of day, night, year, and the seasons	Recognizes that a major source of the Earth's heat and light is the Sun and describes the motion of the Earth in relation to the Sun, including the concepts of day, night, year, and the seasons
Identifies the seasons and their characteristics	Identifies the seasons and their characteristics	Identifies the seasons and their characteristics	Identifies the seasons and their characteristics
Identifies and describes the patterns of movement of objects visible in the sky over time (e.g., the moon)	Identifies and describes the patterns of movement of objects visible in the sky over time (e.g., seasonal position of the sun)	Identifies and describes the patterns of movement of objects visible in the sky over time (e.g., seasonal position of the sun, constellations)	Identifies and describes the patterns of movement of objects visible in the sky over time (e.g., seasonal position of the sun, constellations)
Identifies major features of Earth's surface (e.g., mountains, rivers, plains, plateaus) and the natural processes and forces that shape the Earth's surface, including weathering, erosion, and floods that gradually and rapidly shape the Earth's surface	Identifies major features of Earth's surface (e.g., mountains, rivers, plains, plateaus) and the natural processes and forces that shape the Earth's surface, including weathering, erosion, floods, and earthquakes that gradually and rapidly shape the Earth's surface	Identifies major features of Earth's surface (e.g., mountains, rivers, plains, plateaus) and the natural processes and forces that shape the Earth's surface, including weathering, erosion, earthquakes, floods, and volcanic activity that gradually and rapidly shape the Earth's surface	Identifies major features of Earth's surface (e.g., mountains, rivers, plains, plateaus) and the natural processes and forces that shape the Earth's surface, including weathering, erosion, earthquakes, floods, and volcanic activity that gradually and rapidly shape the Earth's surface
Describes natural events (e.g., volcanoes, hurricanes)	Describes natural events (e.g., volcanoes, hurricanes, tornadoes, earthquakes)	Describes natural events (e.g., volcanoes, hurricanes, tornadoes, earthquakes), and explains how they affect humans	Describes natural events (e.g., volcanoes, hurricanes, tornadoes, earthquakes), and explains how they affect humans
Investigates the general characteristics of atmosphere	Investigates and describes the general characteristics of atmosphere	Investigates and describes the general characteristics of atmosphere and the fundamental processes of weather	Investigates and describes the general characteristics of atmosphere and the fundamental processes of weather
Collects and records weather data and notes how human activities are affected by it	Collects and records weather data and notes how human activities are affected by it	Collects and records weather data and notes how human activities are affected by it	Collects and records weather data and notes how human activities are affected by it
Describes the water resource, its uses and importance	Describes the water resource, its uses, importance, and cyclic patterns of movement through the environment	Describes the water resource, its uses, importance, and cyclic patterns of movement through the environment	Describes the water resource, its uses, importance, and cyclic patterns of movement through the environment
Describes how fossils provide evidence about the plants and animals that lived long ago	Describes how fossils provide evidence about the plants and animals that lived long ago and the nature of the environment at the time	Describes how fossils provide evidence about the plants and animals that lived long ago and the nature of the environment at the time	Describes how fossils provide evidence about the plants and animals that lived long ago and the nature of the environment at the time

ABE II Performance Standards

Indicator E: Earth and Space Science

Beginning (occasionally, seldom)	Approaching (sometimes)	Met (often, most of the time)	Exceeds (consistently)
Defines <i>revolution</i> and <i>rotation</i>	Distinguishes between <i>revolution</i> and <i>rotation</i>	Distinguishes between <i>revolution</i> and <i>rotation</i> and gives an example of their effects as seen on the Earth	Distinguishes between <i>revolution</i> and <i>rotation</i> and gives an example of their effects as seen on the Earth
Describes common objects in the solar system and explains how they are related	Describes common objects in the solar system and explains how they are related	Describes common objects in the solar system and explains how they are related	Describes common objects in the solar system and explains how they are related
Describes the layers of the Earth	Describes the layers of the Earth and their compositions	Describes the layers of the Earth and their compositions	Describes the layers of the Earth and their compositions
Explains how rocks, minerals and soil are formed	Explains how rocks, minerals and soil are formed	Explains how rocks, minerals and soil are formed	Explains how rocks, minerals and soil are formed
Describes how life and environmental conditions have changed over time (geologic and recent)	Describes how life and environmental conditions have changed over time (geologic and recent)	Describes how life and environmental conditions have changed over time (geologic and recent)	Describes how life and environmental conditions have changed over time (geologic and recent)
Identifies Earth processes	Identifies Earth processes and compares the processes that affect the Earth today with those that occurred in the past	Identifies Earth processes and compares the processes that affect the Earth today with those that occurred in the past	Identifies Earth processes and compares the processes that affect the Earth today with those that occurred in the past
Explains how water is cycled in nature	Explains how water is cycled in nature and identifies the distribution of water on Earth	Explains how water is cycled in nature and identifies the distribution of water on Earth, underground and in the atmosphere	Explains how water is cycled in nature and identifies the distribution of water on Earth, underground and in the atmosphere
Describes currents and waves	Describes currents, waves, and tides	Describes currents, waves, tides and ocean floor features	Describes currents, waves, tides and ocean floor features
Describes the basic characteristics of the Earth's bodies of fresh water and salt water	Describes the basic characteristics of the Earth's bodies of fresh water and salt water	Describes the basic characteristics of the Earth's bodies of fresh water and salt water	Describes the basic characteristics of the Earth's bodies of fresh water and salt water
Describes weather and climate	Describes the difference between weather and climate	Describes the difference between weather and climate	Describes the difference between weather and climate
Defines basic terms associated with weather systems including fronts and pressure systems	Defines basic terms associated with weather systems including fronts, pressure systems and types of clouds	Defines basic terms associated with weather systems including fronts, pressure systems and types of clouds	Defines basic terms associated with weather systems including fronts, pressure systems and types of clouds
Identifies the layers of the atmosphere	Describes the properties of the layers of the atmosphere	Describes the properties and composition of the layers of the atmosphere	Describes the properties and composition of the layers of the atmosphere
Explains how technology has impacted both Earth and space science giving one example	Explains how technology has impacted both Earth and space science giving two examples	Explains how technology has impacted both Earth and space science giving multiple examples	Explains how technology has impacted both Earth and space science giving multiple examples

ABE III Performance Standards

Indicator E: Earth and Space Science

Beginning (occasionally, seldom)	Approaching (sometimes)	Met (often, most of the time)	Exceeds (consistently)
<p>Describes and models the motion of the Earth in relation to the sun, including the concepts of day, night, season, and year</p> <p>Describes common objects in the universe and explains their relationships including the concepts of galaxies, sun, moon, eclipses, planets, asteroids, comets, and gravity</p> <p>Describes the composition (including the formation of minerals, rocks, and soil) and the structure of the Earth (including landforms, oceans)</p> <p>Explains how fossils are formed and provide evidence of how life and environmental conditions have changed</p> <p>Explains how Earth processes seen today, including erosion, are similar to those that occurred in the past</p> <p>Describes the distribution and circulation of the world's water through rivers, ground water, and atmosphere</p> <p>Describes the composition and physical characteristics (including currents, waves, tides, and features of the ocean floor) of the Earth's bodies of water</p>	<p>Describes and models the motion of the Earth in relation to the sun, including the concepts of day, night, season, and year</p> <p>Describes common objects in the universe and explains their relationships including the concepts of star clusters, galaxies, sun, moon, eclipses, planets, asteroids, comet s, and gravity</p> <p>Describes the composition (including the formation of minerals, rocks, and soil) and the structure of the Earth (including landforms, oceans, and lithospheric plates)</p> <p>Explains how fossils are formed and provide evidence of how life and environmental conditions have changed</p> <p>Explains how Earth processes seen today, including erosion and movement of lithospheric plates are similar to those that occurred in the past</p> <p>Describes the distribution and circulation of the world's water through glaciers, rivers, ground water, and atmosphere</p> <p>Describes the composition and physical characteristics (including currents, waves, tides, and features of the ocean floor) of the Earth's bodies of water</p>	<p>Describes and models the motion of the Earth in relation to the sun, including the concepts of day, night, season, and year</p> <p>Describes common objects in the universe and explains their relationships including the concepts of multiple star systems, star clusters, galaxies, sun, moon, eclipses, planets, asteroids, comets, and gravity</p> <p>Describes the composition (including the formation of minerals, rocks, and soil) and the structure of the Earth (including landforms, oceans, and lithospheric plates); explains the processes involved in the formation of the Earth's structures</p> <p>Explains how fossils are formed and provide evidence of how life and environmental conditions have changed</p> <p>Explains how Earth processes seen today, including erosion, movement of lithospheric plates, and changes in atmospheric composition, are similar to those that occurred in the past</p> <p>Describes the distribution and circulation of the world's water through ocean currents, glaciers, rivers, ground water, and atmosphere</p> <p>Describes the composition and physical characteristics (including currents, waves, tides, and features of the ocean floor) of the Earth's bodies of water</p>	<p>Describes and models the motion of the Earth in relation to the sun, including the concepts of day, night, season, and year</p> <p>Describes common objects in the universe and explains their relationships including the concepts of multiple star systems, star clusters, galaxies, sun, moon, eclipses, planets, asteroids, comets, and gravity</p> <p>Describes the composition (including the formation of minerals, rocks, and soil) and the structure of the Earth (including landforms, oceans, and lithospheric plates); explains the processes involved in the formation of the Earth's structures</p> <p>Explains how fossils are formed and provide evidence of how life and environmental conditions have changed</p> <p>Explains how Earth processes seen today, including erosion, movement of lithospheric plates, and changes in atmospheric composition, are similar to those that occurred in the past</p> <p>Describes the distribution and circulation of the world's water through ocean currents, glaciers, rivers, ground water, and atmosphere</p> <p>Describes the composition and physical characteristics (including currents, waves, tides, and features of the ocean floor) of the Earth's bodies of water</p>
Beginning (occasionally, seldom)	Approaching (sometimes)	Met (often, most of the time)	Exceeds (consistently)
Describes the composition, properties,	Describes the composition, properties,	Describes the composition, properties,	Describes the composition, properties,

<p>and structures of the atmosphere, such as the range and distribution of temperature and pressure in the troposphere</p> <p>Observes, analyzes, and records weather patterns and data, including temperature and cloud types over a period of time</p> <p>Explains how technology has impacted both earth and space science by describing one technological advances that have impacted both</p>	<p>and structures of the atmosphere, such as the range and distribution of temperature and pressure in the troposphere</p> <p>Observes, analyzes, and records weather patterns and data, including temperature, cloud types, and humidity over a period of time</p> <p>Explains how technology has impacted both earth and space science by describing two technological advances that have impacted both</p>	<p>and structures of the atmosphere, such as the range and distribution of temperature and pressure in the troposphere</p> <p>Observes, analyzes, and records weather patterns and data, including temperature, cloud types, humidity, and dew point over a period of time</p> <p>Explains how technology has impacted both earth and space science by describing multiple technological advances that have impacted both</p>	<p>and structures of the atmosphere, such as the range and distribution of temperature and pressure in the troposphere</p> <p>Observes, analyzes, and records weather patterns and data, including temperature, cloud types, humidity, and dew point over a period of time</p> <p>Explains how technology has impacted both earth and space science by describing multiple technological advances that have impacted both</p>
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ABE III Performance Standards
Indicator E: Earth and Space Science

ASE I Performance Standards

Indicator E: Earth and Space Science

Beginning (occasionally, seldom)	Approaching (sometimes)	Met (often, most of the time)	Exceeds (consistently)
Suggests ways in which the following events affect living organisms: floods, droughts, earthquakes, heat waves, storms	Suggests ways in which the following events affect living organisms: floods, droughts, earthquakes, heat waves, storms, sunspots	Suggests ways in which the following events affect living organisms: floods, droughts, earthquakes, heat waves, storms, sunspots, novas	Suggests ways in which the following events affect living organisms: floods, droughts, earthquakes, heat waves, storms, sunspots, novas
Explains the principles of hydrology, including surface and ground water flows and sources of water contamination and pollution	Explains the principles of hydrology, including surface and ground water flows, desalinization and sources of water contamination and pollution	Explains the principles of hydrology, including surface and ground water flows, aquifers, percolation, desalinization and sources of water contamination and pollution	Explains the principles of hydrology, including surface and ground water flows, aquifers, percolation, desalinization and sources of water contamination and pollution
Uses the theory of plate tectonics to explain the relationship among volcanoes, earthquakes, mid-ocean ridges and deep sea trenches	Uses the theory of plate tectonics to explain the relationship among volcanoes, earthquakes, mid-ocean ridges and deep sea trenches	Uses the theory of plate tectonics to explain the relationship among volcanoes, earthquakes, mid-ocean ridges and deep sea trenches	Uses the theory of plate tectonics to explain the relationship among volcanoes, earthquakes, mid-ocean ridges and deep sea trenches
Describes how these forces shape the Earth: volcanoes, earthquakes, and wind and water erosion	Describes how these forces shape the Earth: landslides, volcanoes, earthquakes, and wind and water erosion	Describes how these forces shape the Earth: glaciation, landslides, volcanoes, earthquakes, and wind and water erosion	Describes how these forces shape the Earth: glaciation, landslides, volcanoes, earthquakes, and wind and water erosion
Differentiates among the theories of the origin of: the universe (Big Bang Theory), the solar system (nebular dust and gas), and life forms (evolution and creation)	Differentiates among the theories of the origin of: the universe (Big Bang Theory), the solar system (nebular dust and gas), and life forms (evolution and creation)	Differentiates among the theories of the origin of: the universe (Big Bang Theory), the solar system (nebular dust and gas), and life forms (evolution and creation)	Differentiates among the theories of the origin of: the universe (Big Bang Theory), the solar system (nebular dust and gas), and life forms (evolution and creation)
Illustrates the Earth's rotation and revolution and their effects on the seasons	Illustrates the Earth's tilt, rotation and revolution and their effects on the seasons	Illustrates the Earth's tilt, rotation and revolution and their effects on the seasons and the length of days	Illustrates the Earth's tilt, rotation and revolution and their effects on the seasons and the length of days

ASE II Performance Standards

Indicator E: Earth and Space Science

Beginning (occasionally, seldom)	Approaching (sometimes)	Met (often, most of the time)	Exceeds (consistently)
Discusses the costs, benefits and consequences of natural resource exploration	Discusses the costs, benefits and consequences of natural resource exploration and development	Discusses the costs, benefits and consequences of natural resource exploration, development and consumption	Discusses the costs, benefits and consequences of natural resource exploration, development and consumption
Analyzes energy in the Earth's system, including gravitational energy, internal and external sources of energy, weather and climate	Analyzes energy in the Earth's system, including radioactive decay, gravitational energy, internal and external sources of energy, weather and climate	Analyzes energy in the Earth's system, including radioactive decay, geo-chemical cycles, gravitational energy, internal and external sources of energy, weather and climate	Analyzes energy in the Earth's system, including radioactive decay, geo-chemical cycles, gravitational energy, internal and external sources of energy, weather and climate
Describes the factors that influence the conservation of water	Describes the factors that influence the recycling and conservation of water	Describes the factors that influence the reuse, recycling and conservation of water	Describes the factors that influence the reuse, recycling and conservation of water
Analyzes how weather is influenced by natural and artificial features	Analyzes how weather is influenced by natural and artificial features and by natural dynamic processes	Analyzes how weather is influenced by natural and artificial features and by natural and artificial dynamic processes	Analyzes how weather is influenced by natural and artificial features and by natural and artificial dynamic processes